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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
GUIDRY, GUY L	

ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/536,736	BASTIAN ET AL.	
	Examiner	Art Unit	
	Guy Guidry, Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5,9-17,22,24-31,33-40,51,53-55,59-64,69-74 and 76-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-5, 9-17, 22, 24-31, 33-40, 51, 53-55, 59-64, 69-74, 76-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of a response filed 9 June 2006 to the Office Action mailed 30 December 2005. Claims 2, 18-21, 23, 32, 41-50, 52, 58, 67-68, and 75 are canceled. Claims 6-8, 56-57 are withdrawn. Claims 1, 4-5, 10-13, 22, 25-31, 33, 35-36, 39, 51, 62 and 69-74 are amended. New claims 77-91 are entered. Claims 1, 3-5, 9-17, 22, 24-31, 33-40, 51, 53-55, 59-64, 69-74, 76-91 are currently pending in this application and under consideration in this Action. All previous objections/rejections not repeated herein are hereby withdrawn. Previous rejections to canceled claims have been rendered moot by Applicant's cancellation of those claims. A response to Applicant's arguments will be set forth, where appropriate, immediately following any statement of rejection repeated herein.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-5, 9-17, 19-20, 22, 24-40, 51, 53-57, 59-64, 69-74 were 76 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Independent claims 1 and 51 (thus all dependent claims) were directed to a process for isolating nucleic acids, and recite the phrase "wherein the nucleic acids are immobilized on the top side of an non-siliceous surface [membrane] *in the absence of a*

cationic detergent" (emphasis added). The highlighted phrase is a specific negative limitation for which there is no implicit or explicit support in the specification. As such, said negative limitation constitutes constituted impermissible new matter.

Response to Amendments and Arguments

Applicant has amended the claims to eliminate the negative limitation, therefore rejection of claims 1, 3-5, 9-17, 19-20, 22, 24-40, 51, 53-57, 59-64, 69-74 and 76 under 35 U.S.C. 112, first paragraph is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 9-17, 19-20, 22, 24-40, 51, 53-57, 59-64, 69-74 and 76-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al. (EP 0431905 A1) and further in view of Pfister et al. (J. Biol. Chem. 1996; 271(3):1687-94) and Boom et al. (US 5,234,809).

This rejection is of record and repeated in modified for herein below. The claims are directed to a process for isolating nucleic acids comprising steps of charging the topside of a two sided non-siliceous surface, where nucleic acids are immobilized on one side and released from the same side and where nucleic acids do not penetrate through or make contact with the opposing side of the non-siliceous surface. The immobilization is in the presence of a salt and an alcohol and in the absence of a cationic detergent. The releasing solution can be water, aqueous salt or buffer solution.

Ogawa teaches a process for isolating DNA comprising applying a solution (triptone, NaCl and yeast extract) containing DNA and proteinase K to a membrane, which can be any commercially available membrane, for example polysulfone (non-siliceous). (e.g., col. 3, ll. 37-41). Ogawa teaches that washing with an appropriate buffer solution would increase yield, and gives TE-buffer as an example. (e.g., col. 3, ll. 45-50). Ogawa also teaches that DNA is released from the membrane using shaking in a volume of TE buffer, where the eluate is recovered by pipette (without penetration through the membrane or contract with opposing surface). (e.g., col. 4, ll. 35-39).

Ogawa does not explicitly teach the step of immobilizing nucleic acids to the non-siliceous membrane in the *presence of a salt and an alcohol.* However, the reference need not teach what is routinely practiced in the prior art. Indeed, utilizing salts such as

guanidium isothiocynate, as well as including alcohol such as ethanol, was routinely practiced in the prior art in immobilizing nucleic acids (e.g., RNA) onto surfaces.

For example, Pfister teaches that in order to purify nucleic acids (i.e., RNA) from culture the RNeasy® kit is utilized. The RNeasy® handbook teaches several protocols for isolating RNA from cell lysis, including adding buffer RLT (containing salt – guanidium isothiocynate; as in the instant Specification, p. 19, Example 3) and adding ethanol to clarified lysis, which mixture is subsequently added to RNeasy membrane. (RNeasy® Mini Handbook, May 1999: 1-12, at p. 8; available at <www.umich.edu/~caparray/PDF/RNeasy.pdf>) (last accessed 12/23/05; hereinafter Handbook). If it were contended that the Handbook is not analogous because the membrane utilized therein is siliceous, it is important to note that in methods of purifying nucleic acids, siliceous and non-siliceous membranes are often disclosed as supporting the same process – purifying nucleic acids – with the understanding that one of skill in the art will recognize that it would require nothing more than routine experimentation to optimize conditions relative to buffers or membranes.

For example, Boom teaches methods of purifying nucleic acids using various buffers (columns 6-7). Further Boom teaches that the methods are suitable for various nucleic acids (e.g., RNA, dsDNA, ssDNA, col. 8, ll. 15), including buffers and chaotropic agenst of various concentrations (material and Methods, cols. 5-7). The reference teaches that various surfaces, including siliceous and non-siliceous (e.g., silica derivatives, latex, PVDF, nitrocellulose, Hybond-N, representing membranes with variety of pore sizes), can be utilized in purifying nucleic acids. (e.g., col. 6, ll. 5-27).

Thus the evidence in the art suggests that optimizing buffers and immobilizing surfaces constitutes nothing more than routine experimentation. As a result, Applicant's implicit assertion that employing a step of immobilizing nucleic acids to a non-siliceous surface in the presence of a salt and an alcohol, cannot be deemed nonobvious.

Therefore it would have been *prima facie* obvious to optimize the buffer conditions of Ogawa, so as to include salts and an alcohol, in practicing a method of purifying nucleic acids. One would have been motivated to optimize the buffer/membrane combinations, depending on the species of nucleic acids sought to be purified, given the broad limitation "nucleic acids" to which the base claims are directed. Further, given the level of skill in the art at the time of invention, there would have been a reasonable expectation of success in conducting routine experimentation to obtain optimum conditions for purifying a particular species of nucleic acid.

Response to Arguments

Applicant's arguments have been fully considered and they are not persuasive. Applicant has traversed the rejection on the grounds that Ogawa teaches a process of ultrafiltration and that in reading Ogawa, a person of skill in the art would not be motivated to modify the procedure described by Ogawa. Applicant also argues that Ogawa teaches the use of the same buffer, such as TE, to both wash and elute the DNA that is retained on the ultrafilter membrane (giving low yield of the isolated DNA) which distinguishes Ogawa from the claimed inventions. Applicant also argues that Ogawa's methods and the instant claimed methods isolate different types of nucleic

acids. In sum, Applicant argues that the combination of Ogawa, Pfister and Bloom neither teaches nor suggests Applicant's claimed inventions.

First, it must be noted that Ogawa's use of the term "ultrafilter" to describe the nucleic acid-binging substrate does not distinguish reference methods from the claimed instant inventions. The processes are both drawn nucleic acid isolation by binding to a membrane substrate. Given the broadest possible interpretation, it is clear that Ogawa teaches nucleic acid is immobilized on a non-siliceous membrane in the presence of an immobilization buffer and subsequent release of the nucleic acids by application of en elution agent (TE for example) where the nucleic acids do not pass through to the other side of the membrane. Further, nowhere in the instant disclosure is the teaching that the membrane may not be a filter or an ultrafilter.

With respect to Applicant's argument that the ultrafilter of Ogawa "may be made of polysulfone" is materially different from that statement that the ultrafilter may be polysulfone, the Office finds that no relevant distinction exists between the two. Ultrafilters made of any material is considered to encompass an ultrafilter made of any available membrane. In other words, an ultrafilter made of polysulfone is considered equivalent to an ultrafilter that can be polysulfone, thus the membranes described by Ogawa meet the limitations of the instant claims.

Applicant's argument that Ogawa's teaching that a single buffer may be used to both wash and elute DNA from the ultrafilter membrane distinguishes Ogawa's methods from the instant claimed process is not persuasive. The Ogawa process fully meets the limitations of the instant claimed method, wherein DNA is immobilized in the presence

of an immobilization buffer and released by applying an elution agent. Ogawa's teaching that TE buffer may be used as both a *wash solution* and elution buffer does not distinguish the instant claimed methods over Ogawa, as the TE clearly works in both capacities as demonstrated in the example provided (see especially col. 4). Further, in combining the teachings of Ogawa, Pfister and Boom, any number of suitable immobilization buffers and elution agents may be applied to the procedure in order to o optimize the buffer/membrane combinations.

With respect to Bloom, Applicant argues that the reference teaches nucleic acids bound so tightly to non-siliceous membranes that elution with TE buffer cannot occur, citing col. 22 lines 8-10.It should be noted that Applicants own claims are drawn to a process for isolating nucleic acids *comprising* various steps. As detailed previously, Boom teaches methods of purifying nucleic acids using various buffers (columns 6-7), that the methods are suitable for various nucleic acids (e.g., RNA, dsDNA, ssDNA). (col. 8, ll. 15) and that that various surfaces, including siliceous and non-siliceous (e.g., silica derivatives, latex, PVDF, nitrocellulose, Hybond-N), can be utilized in purifying nucleic acids. (e.g., col. 6, ll. 5-27). Applicant's specific citation of one example of the many examples present in the Bloom reference does not alter the salient teachings of the reference, that nucleic acids may be purified using various buffers (immobilization and elution) and the use of various binding substrates.

The question at hand is whether a person of skill, reading Ogawa would have the motivation to combine that which was known in the art with the teachings of Pfister and Bloom to devise the instant claimed inventions. Fully considering what is taught by the

references and would have been know in the art, it is still deemed that combined teachings of Ogawa, Pfister and Bloom make obvious the instant claimed inventions. A person of skill in the art would have been motivated to combine the teachings to of the references optimize the buffer/membrane combinations, depending on the species of nucleic acids sought to be purified, and to conduct routine experimentation to obtain optimum conditions for purifying a particular species of nucleic acid of the instant claimed methods.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy Guidry, Ph.D. whose telephone number is 571-272-7928. The examiner can normally be reached on Monday through Friday 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel, Ph.D. can be reached on 571-272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Guy Guidry, Ph.D.

Examiner

Art Unit 1636

DANIEL M. SULLIVAN
PATENT EXAMINER